

**SAWS**  
**KNIVES**  
and **FILES**

*for*  
**METAL and**  
**WOODWORKING**  
**SHOPS**

# SAWS KNIVES and FILES



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**METAL and  
WOODWORKING  
SHOPS**



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SIMONDS SAW AND STEEL Co.  
Fitchburg, Mass.  
Revised 1925

THIS little booklet deals mainly with three important subjects of interest to woodworkers. First, the selection of certain tools; second, their use; and third, their care.

The beginner in school or shop cannot well know these subjects. Even the skilled worker is not always fully acquainted with them, hence the care in preparation and detail in explanation of the points covered. This book is published in hope that it will give help where help is needed.

The Simonds Saw and Steel Company has been assisted in this work by men who train the mind as well as the hand in the selection, use and care of tools. It is a pleasure to name these men whose contributions have so greatly added to the value of this booklet.

ARTHUR J. BEAN, Director of Manual Training, Worcester, Mass.

WILLIAM J. BOGAN, Principal, Lane Technical School, Chicago, Ill.

CLYDE A. BOWMAN, Director of Industrial Arts, The Stout Institute, Menominee, Wis.

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A. H. WHITESITT, Professor of Industrial and Applied Arts, Kansas Manual Training School, Pittsburg, Kans.



# HAND SAWS



**N**O SAW is better than the steel from which it is made. There are many different kinds of steel. A very good steel for one purpose may be very poor for another. The Simonds Saw and Steel Company make their own steel in their Steel Mill at Lockport, N. Y., where they maintain a completely equipped experimental laboratory. Only high grade crucible and electric steel is manufactured. Constant testing during many years of experience have taught them just what kind of steel to use for the particular purpose for which the tool is intended. In every case the steel best suited

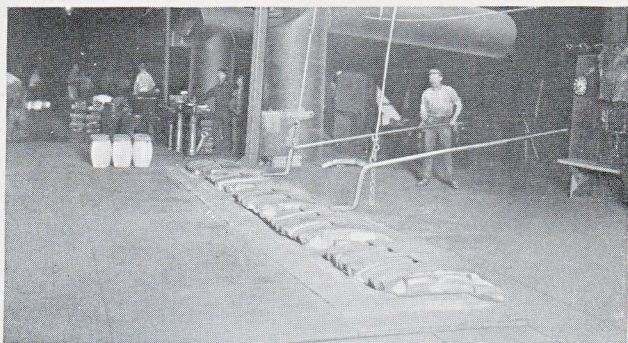


Six ton Cold Melt Electric Furnace pouring into six ton capacity ladle

to the particular tool is used without regard to expense. The company believes a slight saving in the steel to be a false economy.

A very large proportion of the workmen in the Simonds Saw and Steel Company's factories have been in the employ of the company for many years, during which they have gained much knowledge from the users of tools and unusual skill in making them equal to the demands upon them.

We will first consider the making of Hand Saws. Each saw consists of a steel blade and a handle usually of wood, but sometimes of metal. The edge with the teeth is called the tooth edge and the opposite edge the back. The end to which the handle is attached is the heel or butt and the opposite end the toe.

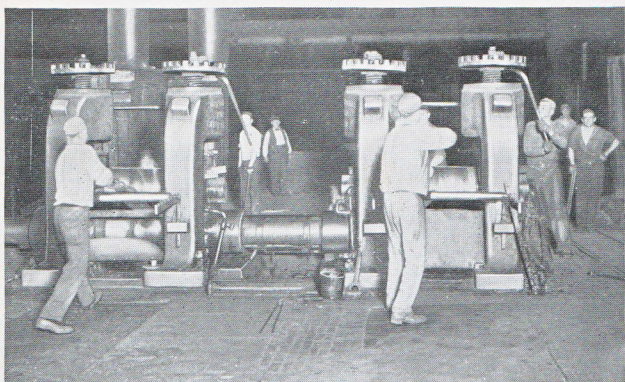


One of our four 30-pot Crucible Melting Furnaces in operation

The steel for Simonds Hand Saws comes to the factory in thin sheets from our Steel Mills. First these sheets are "sheared," that is, cut to the shape of a hand saw blade. After this they go to the tothing room where the teeth are cut, properly shaped and spaced by machines. Then to the furnaces where they are heated very hot and at just the right time are suddenly dropped into a trough of cold oily



fluid. The sudden and great change of temperature "freezes" the steel so hard that it can be broken about as easily as a piece of ice. Saw blades as hard as this would be useless so they are heated again, but not as hot as before, and kept at this heat for a time until they begin to lose their hardness and finally become tough and pliable. This is called "tempering." The blades are removed from the furnaces while they are hard enough to take and hold a very sharp cutting edge and yet are tough and elastic enough to bend easily and spring back to place. The hardening and tempering are very important steps in making saws, so important that the proper heat and the length of time they are left in the furnaces are controlled mechanically.



One of our Sheet Mills in Operation

After they have been allowed to cool, the blades are placed on anvils and carefully straightened with a hammer. They are then sent to the grinding room where they are "taper ground," that is the backs are ground thinner than the tooth edges and the points thinner than the butts. This makes certain that they will cut without binding.

They are then smoothly polished and sent to be "blocked." This is done with hammers and can be properly

done only by expert workmen. "Blocking" makes the blade cut true to the line. It is of course much more than simply hammering, but this cannot be fully explained in a brief statement.

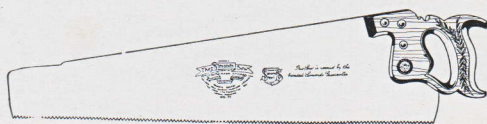
After the blocking, the blades are polished again and then sent to the filing room to be sharpened and set. "Setting" means bending each tooth a little out from the straight line of the blade, one to the right and the next to the left. This will be taken up in greater detail in another section.

Now the saw blades are ready to be etched with the "Simonds" trademark. Next the handles are fitted to the blades and the completed saws after a final inspection are ready for shipment.

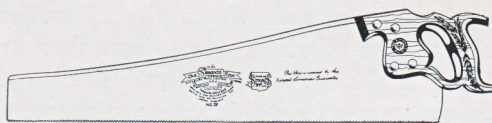
While the foregoing has not been given in complete detail, it will give a general idea of the way hand saws are made.

On pages 9 and 10 we show the various steps in the making of a hand saw.

Now it will be well to learn the common names of the different parts of a hand saw. The back of the saw is the edge opposite the teeth; the end to which the handle is attached is the heel or butt; the toe or point is the end opposite the handle end.



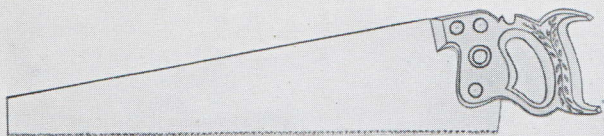
Straight Back



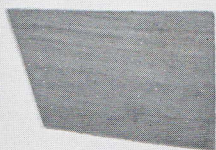
Skew Back

There are two common shapes of hand saws—the straight back and the skew back. The straight back is a little

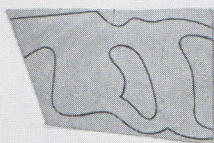




PROGRESSIVE STEPS IN THE MANUFACTURE OF A  
SIMONDS HAND SAW HANDLE  
SIMONDS MFG. CO.



ROUGH  
APPLEWOOD  
BLOCK



PLANED AND  
MARKED TO BE  
SAWED



BAND SAWED  
AND JIGGED



MOULDED  
AND SANDED



DRILLED  
AND SLOTTED

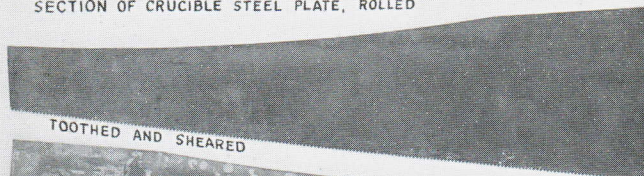


CARVED AND  
POLISHED

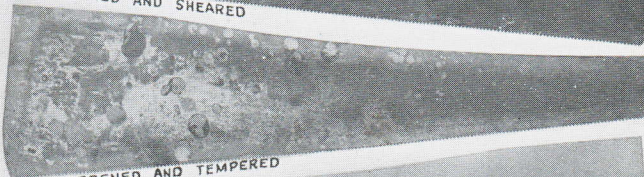
# PROGRESSIVE STEPS SIMONDS HAND SAW BLADES



SECTION OF CRUCIBLE STEEL PLATE, ROLLED



TOOTHED AND SHEARED



HARDENED AND TEMPERED



TAPER GROUND

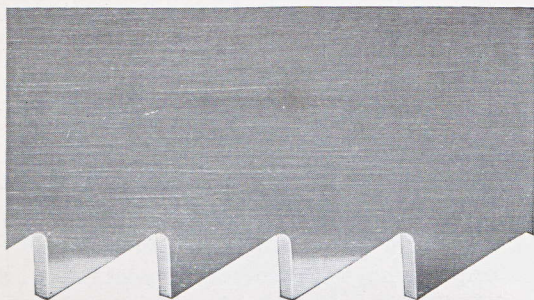


POLISHED, ETCHED, FILED AND SET



heavier, a little stiffer. Many, however, make the selection between these two simply on the ground of which is more pleasing to the eye. The finish is an index of the quality as the labor required to give an added finish can only be put into high-grade saws.

Of the common or regular hand saws, there are two main divisions, the Cross-cut or Cut-off, and Rip or Splitting. The Cut-off or Cross-cut is used when sawing across the grain of the wood and the Rip or Splitting when cutting with the grain. The terms "Cross-cut," for saws to cut across the grain, and "Rip," for saws to cut with the grain, are more general in the hardware trade and for this reason will be used here. The difference is in the shape of the teeth. This is well shown in the accompanying illustrations.



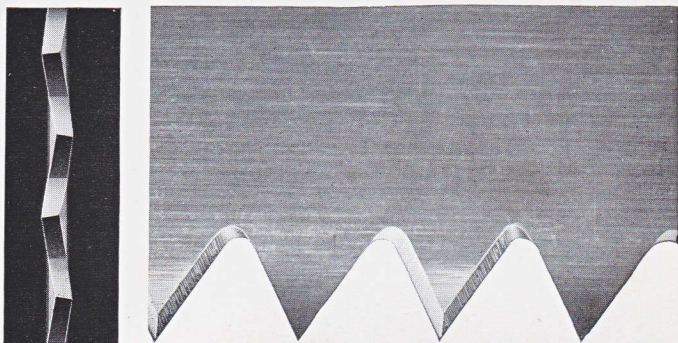
Properly Filed Rip Saw Teeth (*enlarged*)



The size of a saw is the length of the blade in inches. Hand saws range from 16 to 26 inches. Saws 22 inches and 24 inches in length will be found most satisfactory for elementary school shops because they can be handled more easily by the boys.

The number of teeth to the inch determines the size of the teeth. It is evident that four teeth to an inch will

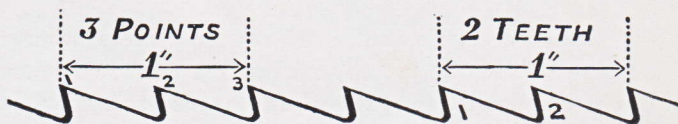
give a bigger tooth than ten teeth to an inch. In cataloging saws, the number of points to the inch is usually given. The points to the inch are always one more than the teeth to the inch, as shown in the illustration.



Properly Filed Cross-cut Hand Saw Teeth (*enlarged*)

Keep in mind the difference between the teeth and the points. The teeth of the hand saw are the triangular shaped pieces of the blade that are used for cutting. The points are the sharp pointed ends of the teeth.

Hand saws for cross-cutting or cutting across the grain are usually made from five to twelve points to the inch; rip saws for cutting with the grain are made with from four to seven points. All rip saws up to seven points to the inch are made with differing number of teeth to the inch gradually increasing from the butt to the toe. This is

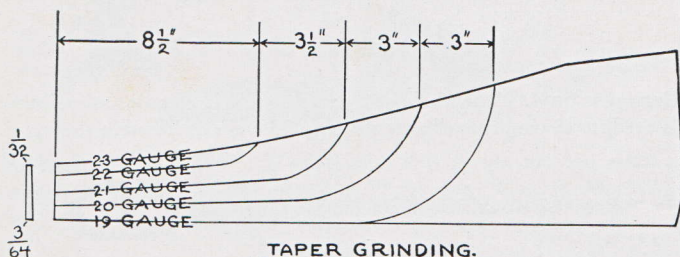


because in ripping wood, the finer teeth will take hold more quickly and after the cut has been started the larger teeth near the butt will do quicker work. In selecting a cross-cut



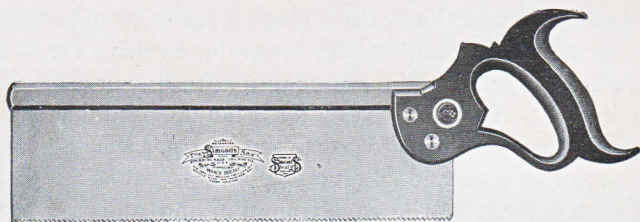
hand saw for general use, the 26 inch length saw with seven, eight or nine points to the inch is usually chosen; for a rip saw, one 26 inch or 28 inch in length with five or six points to the inch. Cross-cut saws for Manual Training shops generally have 10 points to an inch; rip saws 7 points. Back saws 10 inches long have 15 points to the inch.

To help prevent the saw from binding and the teeth from choking up with sawdust, the teeth are bent alternately, one to the right and the next to the left of the line of the teeth. This is called "set." Rip saw teeth are set but little and sometimes not at all. Taper grinding also gives clearance or free space for the blade to move without binding.

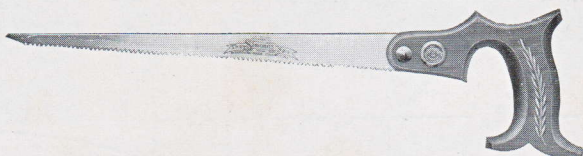


Note that the cutting edge of the blade is 19 gauge (practically  $\frac{3}{64}$  inch) thick and that it tapers to 23 gauge (practically  $\frac{1}{32}$  inch) on the back. Remember when speaking in terms of gauges that a small number like 3 gauge, ( $\frac{1}{4}$  inch) denotes greater thickness than a larger number like 11 gauge ( $\frac{1}{8}$  inch). Taper grinding, because it makes it possible to have less set, helps a saw to cut easily.

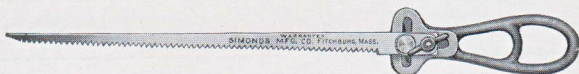
There are many varieties of hand saws for special uses. School shops use besides the regular saws, back, compass, keyhole, joiner or bench, coping, dovetail, and pattern makers' saws.



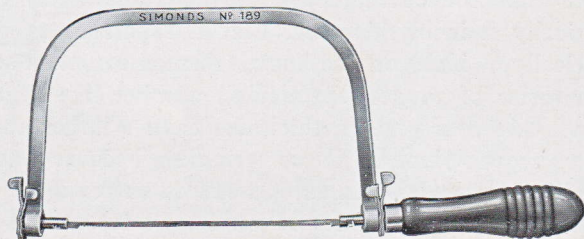
**Back Saw.** The blade of a back saw is thin with small teeth. The back is reenforced by a heavier piece of steel to prevent varying from the straight line of the cut. It is used for fine accurate sawing. Back saws 20" or over are also called mitre saws and are used in a mitre box to make the cut even more accurate.



**Compass Saw.** The blade of a compass saw is narrow and pointed. It is used for sawing curved cuts starting from a hole bored in the wood.



**Keyhole Saw.** Smaller but similar in shape and use to the compass saw. It gets its name from being used to cut keyholes in doors.



**Coping Saw.** Is used for cutting thin stock on curved lines, particularly suitable for scroll work. The blade is very small and can be set in the frame to saw in several directions. It cuts like a band saw.





**Joiner or Bench Saw.** A rather narrow blade of uniform width with fine teeth. It is used for making smooth cuts such as is necessary in making fine joints.

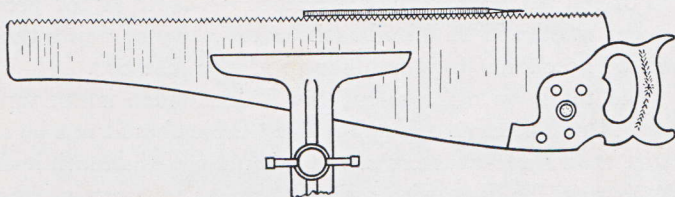


**Dove Tail Saw.** Is a small light weight back saw with very small teeth used for dovetailing.



**Pattern Makers Saw.** A small saw with a thin narrow blade of uniform width. Similar to a bench or joiner saw. Used for small fine work.

## How To File A Hand Saw



**Jointing.** Points of teeth made to come on a line.

**Jointing.** A saw that needs filing will first need to be “jointed”—which means that the points of the teeth must

be filed so that they will all come on a line. This line may be a straight line or more especially on high grade saws, a slightly curved one, giving what is called a "breast" to the saw. Place the saw in the clamp with the butt or handle to the right. Lay a flat file lengthwise on the teeth, using the fingers as a gauge on one side. Then, beginning at the butt end, run the file lightly along the teeth. Don't tip the file. Continue the operation until the teeth are even or with a slight crown in the center, as preferred. After "jointing" it may be necessary to make the teeth uniform in size. To do this file straight through between them. Be sure that the space between each tooth is of equal depth and that the angle on the front of the tooth, (the edge nearest the toe of the blade) and also on the back are correct. This can be determined by making all the teeth like those at the butt where there are some that are never used.

**Setting.** After the teeth are made even by jointing they may need to be "set." The teeth of cross-cut saws with taper ground blades need very little set for seasoned hardwood or kiln dried stock; for wet, spongy or green wood the tooth set should be one-half its thickness. For example, if the tooth edge of the blade is  $\frac{1}{8}$  of an inch thick, bend the point of each tooth  $\frac{1}{2}$  of an inch.

For general work, setting the teeth the same as for green or wet wood will be found satisfactory. By so doing there will be no chance for the blade to bind in the cut.

The teeth on a Cross-cut saw blade which is not taper ground will need more set but even these should not be set more than three-quarters of the thickness of the tooth itself. Setting can be done with a light hammer on a setting anvil or with a lever set. It is better training to use the hammer, but lever sets are more generally used. Begin either from the butt or from the smaller end, as suits the workman, bend the point of *every other tooth* out, then turn the saw



over and bend the points of the remaining teeth, which should be *every alternate one*. Do not attempt haste, as skill and long practice are required to do this well. Unless each tooth is set exactly the same amount the saw will not run smoothly or easily. Care in setting is very important.

Cross-cut saws having 10 or 12 teeth to the inch cut best in hardwood, 6 or 8 teeth to the inch in softwood.

Be particular about the file used. For all 8, 7, 6, and 5 point saws, use a 6-inch Simonds slim taper file or Simonds special hand saw file. For 9 to 12 point and all fine point saws use a Simonds 5-inch file. Set the file straight in a

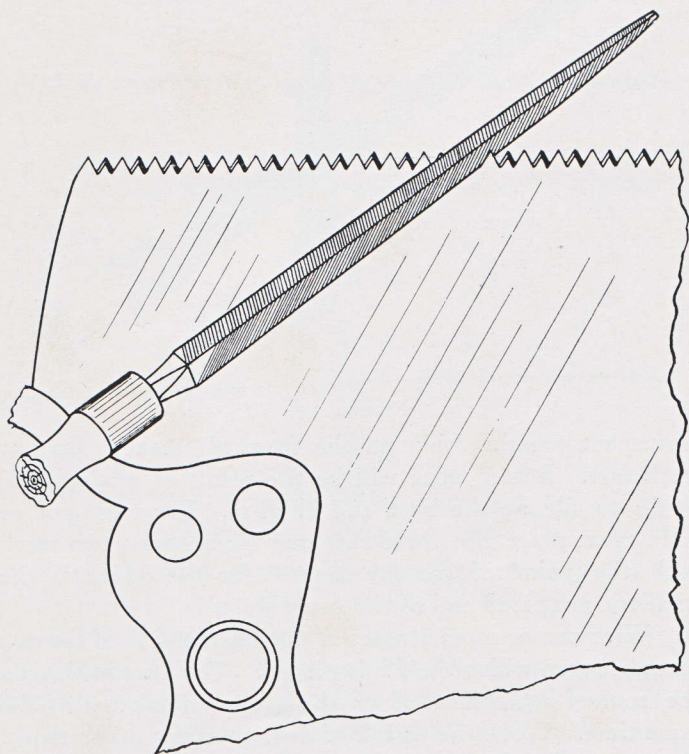


FIGURE I

good file handle. Place a small cap of leather on the point of the file so that as you grasp it the skin on the thumb and fore fingers may not be injured.

**Filing.** Place the saw in the clamp as for jointing, but with the handle to the left. Grasp the file handle in the right hand, taking the point of the file between the thumb and first two fingers of the left. Work with a whole arm

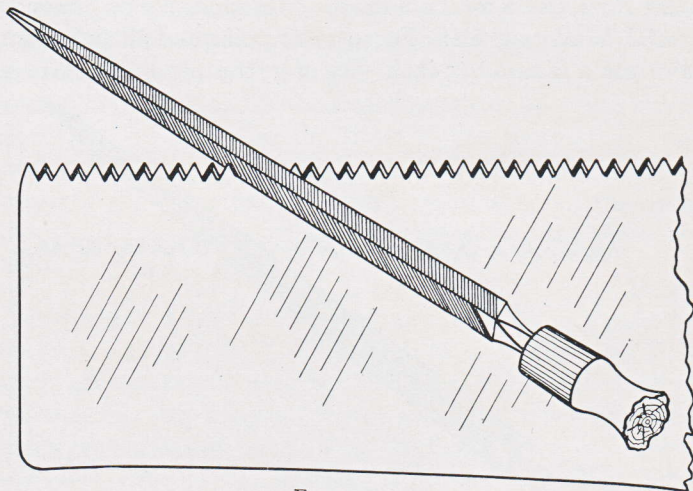


FIGURE 2

movement pressing only on the forward stroke. Do not work fast. Better work will be the result of moderation. Begin to file at the butt end (Fig. 1). For cross-cut or back saws, place the three-cornered file between two teeth with the point of the file toward the toe which is the smaller or tapered end of the saw (Fig. 2).

With one or more strokes of the file, file both of the two teeth between which the file is placed. The file working on the front of one tooth and on the back of the other at the same time. Work the length of saw, on every other tooth. Then turn the saw around so that the butt is to the right.



Point the end of the file as before toward the toe of the saw. File the entire length of the saw on every other tooth in the same manner as before.

A rip saw should be filed straight across the front of the teeth. Set the file between the teeth so that the front of the teeth will be practically straight (Fig. 3). As in filing a cross-cut saw, file every other tooth the full length of the blade, turn the saw around and file the alternate teeth. There will be a slight bevel on the teeth that lean away from the filer. If all the teeth were filed from the same side, the saw would not cut in a straight line.

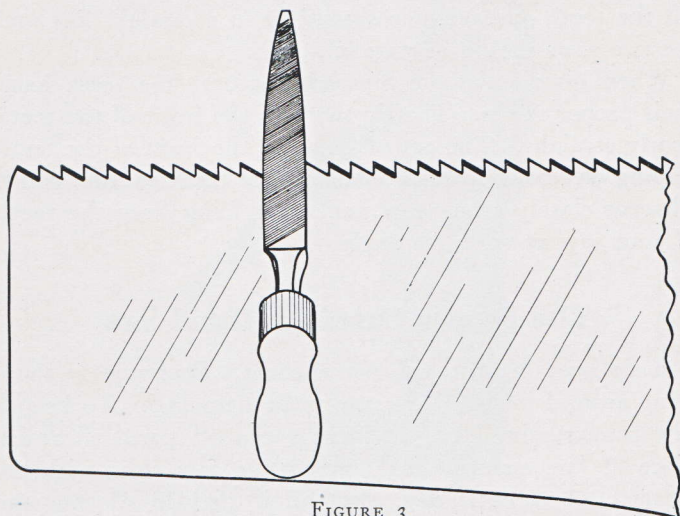


FIGURE 3

As with cross-cut saws, rip saws with taper ground blades require very little set in hardwood or kiln dried stock. In softwoods each tooth should be set about one-quarter its thickness. Green and wet softwood may need a little more but the teeth should never be set more than one-half their thickness. Be sure each tooth is set exactly an equal amount.

For rip saws—seven teeth to the inch work well in hardwood, six teeth to the inch in softwood.

All other operations aside from filing straight across the teeth are the same as in filing a cross-cut saw. File the teeth to a sharp edge only.

**Side Dressing.** Lay the saw on a flat board. Run the side of a flat file gently along the side of the teeth. Turn the saw over and do the same on the other side. This makes the set uniform and removes any rough edges.

**Inspection.** After filing, look down the teeth from the butt to tapered end to see if both lines of teeth are even. All the teeth on each side should be in a straight line and the two rows should be parallel.

When saws leave the Simonds factory, the teeth have their proper shape. The rip saw has the front of the teeth nearly straight. The cut-off saw has the front of the teeth sloping well back from the base of the teeth to the point. Observe closely a new saw and when filing keep the teeth of your saw at the same angle.

## The Proper Care of a Hand Saw

Keep saws in a tool cabinet or chest. Do not leave them lying around for they are sure to be damaged. To keep a saw from rusting have on hand a can of sperm oil and a piece of fine emery cloth. Scour the saw clean with the emery cloth, wipe it dry, then oil it slightly all over the blade.

If a saw twists or becomes crooked try to bend it into shape with your hands. Should this fail take a mallet and on a smooth block of wood try to hammer out the crooks and kinks gently.

It is not advisable to hammer a saw on an anvil. It will almost invariably be spoiled. Every blow struck breaks up the crystals of the steel and stretches the blade. With-



out skill it will soon be weakened and out of shape. To hammer a saw properly requires years of experience and training.

## Selecting A Good Hand Saw

How can you tell when you are getting a good saw? Here are several points about judging hand saws.



To test the “hang” of a saw take hold of it as if to cut with it. If the handle does not fit the hand try others until one is found that does. Then try out the saw by cutting. Be sure it cuts easily and does not pull on the muscles of the forearm. If a straight back saw does not feel just right in your hand try a skew back.

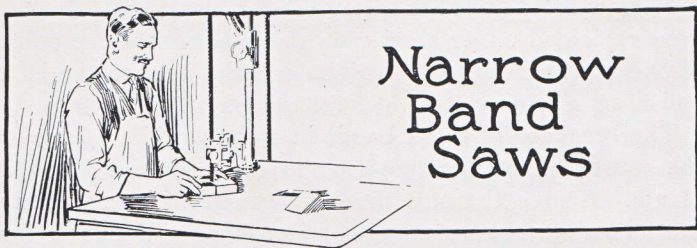
Two very important properties for a good hand saw may be entirely overlooked by one who is not thoroughly in-

formed. One is the breasting or crowning at the cutting edge. The tooth edge of a good hand saw should be on a slightly curved line with the greater curve near the center of the saw. To test this stand the tooth edge on a straight surface. The other point is the grinding. After the teeth have entered the wood a hand saw in cutting should have plenty of room for the blade so that it will not stick. This is provided for in the Simonds hand saw by taper grinding. The saw is so ground that the blade is thicker at the tooth edge than at the back and at the handle end than at the point. Only the very highest grade saws are ground in this manner, for it is expensive. In buying a cheap saw the tooth edge will very likely be on a straight line and the blade of the same thickness in every part. Then to prevent the blade from binding, the teeth must be given more set. The less set necessary the better, for less set makes the saw cut easier if it does not bind. Taper grinding prevents binding.

In selecting the saw, see that the teeth are all the same length. Look down the center line between the teeth. Every other tooth should be bent or set in the opposite direction and to just the same extent. See that the teeth set to the right are all set alike and that the teeth to the left are all set alike and that each row is bent equally from the center line along the edge of the saw. See that the cutting edges of the teeth are sharp, and each tooth like the others on the same side.

See that the surface of the blade is smooth and polished, with no defects and that the blade is firmly and properly set into the handle with a sufficient number of screws to hold it securely. Note the quality and finish of the handle and how it fits the hand.





A BAND SAW, as its name suggests, is an endless strip of tempered steel with teeth along one edge. It is run over two wheels which are usually set one above the other and spaced some distance apart. Band saws 2 inches and wider are usually spoken of as Wide Bands. Those under 2 inches are called Narrow Bands. In actual practice however there are three divisions. The Narrow Bands, Band Re-saws and the Log or Wide Bands.

Band re-saws are used in factories and mills for ripping and resawing lumber. The wide or log bands are used for sawing logs into lumber. Because wood-working shops usually use only narrow band saws, discussion of re-saws and wide bands is omitted here. Those who require information about these should send for Simonds book entitled *The Band Saw*.

Narrow bands are used extensively in mills, cooperage shops, furniture factories and other wood-working establishments for a great variety of purposes.

In using small band saws, the work rests upon a table through the center of which the saw passes, the work being fed by hand.

For general work, the blades are made as narrow as  $\frac{1}{8}$  inch and from that are graduated up by eighths to  $1\frac{3}{4}$  inches. The widths most commonly used are  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{8}$  and  $\frac{3}{4}$  inches. The length varies according to the size of the machine on which they are used.

Narrow band saws are spring set for clearance. As has been explained under hand saws this means that the point of one tooth is bent to the right and the next to the left, and so on alternately throughout the length of the saw.

The breakage of small bands in wood-working plants is the source of much annoyance to the operators of such plants. Among the most frequent causes of breakage are the following: the use of saws of unsuitable thickness for the work; the use of an improper arrangement for giving the saw the required strain on the wheel; not slacking saw after use, thus preventing the free contraction of saw blades on cooling down (they should always be left a trifle slack when not in motion); the braze, that is the part of the circle where the two ends are joined or brazed, not being the same thickness as the rest of the blade; the back guide being too close, so that the saw is constantly rubbing against it, causing the back of the saw to crack.

The back guide should never be so close that the saw will come in constant contact with it. It is only placed there as a matter of precaution, and when the saw will not stay on the wheel without being held there with the back guide, there is trouble somewhere which should be located and corrected.

Saws should never be filed to sharp corners at the bottom of the spaces between the teeth known as the "gullets," they should always be rounded out with a round file or emery wheel.

Working dull saws, feeding work onto the saw too fast, allowing the sawdust to collect on the face of wheel, thus causing it to become lumpy and uneven; stopping or starting a machine too suddenly—especially when using a light blade—will almost certainly snap the saw in two.

**Wheel Covering.** When a covered wheel is used, it should be frequently examined to see that it is perfectly true on the face, as a covered wheel is much more liable



to get out of true than a solid one. Leather is preferable to rubber as it can be trued very easily by turning.

**Setting and Filing.** Saws should be frequently "jointed," to keep them perfectly true to the toothed edge, and the teeth uniform depth. For ripping, the teeth should be filed perfectly straight across; but where rip and cut-off work are both done on the same saw, it is well to file the teeth with a slight bevel. Run as narrow set as possible. For general work have the teeth set one or two gauges heavier over all than the gauge or thickness of the saw blade; that is if your saw is 21 gauge ( $\frac{1}{32}$  inch) the set should be 19 or 20 gauge (about  $\frac{3}{64}$  inch).

For hardwood have the set not more than one gauge thicker than the blade, for example, a 21 gauge blade ( $\frac{1}{32}$  inch) would have the teeth set 20 gauges or slightly less than  $\frac{3}{64}$  of an inch.

Softwood requires a little more set than hard. For dry stock have the set 2 gauges heavier than the blade. For wet or green wood 3 gauges heavier will be found satisfactory.

**Cutting Circles.** The fact that with a narrow band saw, circles or other curved lines can be cut in any desired direction, makes it available for use in cutting intricate and ornamental patterns. Where formerly scroll sawing was done entirely by the reciprocating type—web or scroll saws, working up and down, and coping saws—now the narrow band saw is being widely used with excellent and greater results. Its downward motion carries the sawdust away without the aid of a blower, leaving the lines drawn on the work perfectly clean to the operator.

It is understood, of course, that band saws can be used in this connection only in cases where the pattern is begun on the edge of the stock; for interior designs it is necessary to use a reciprocating saw (jig saw), the end of which can be passed through the interior of the pattern.

## Safety First With Small Band Saws

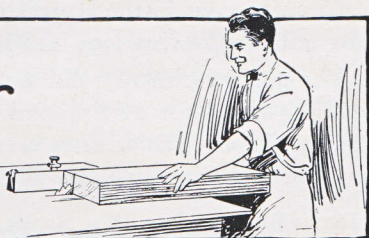
**Accidents.** Accidents are frequently due to the carelessness of the operator getting his hand against the saw at the rear of the table. Accidents most common on band saws are those that occur when the stock is not securely held, with a consequent kinking and breaking of the saw. Severe injury often results from accidents brought about by the operator trying to remove waste pieces near the saw with the hand, or attempting to stop the wheel with hand, foot or stick when the power is shut off; or the band flying off unprotected wheels in case of breakage. Other accidents are due to the workman's clothing becoming caught in the spokes or on the band of an unprotected wheel.

**Prevention.** Safety engineers agree that practically all of these accidents can be prevented by enclosing the upper and lower wheels with either a wire mesh guard or a solid enclosure; also the cutting edge of the saw above the table at the rear, as well as that part above the guide. Guards should be provided for every kind of saw in the shop, as well as for belting, gearing, set screws, shafting and drums. Emery wheels and tool grinders should be protected by guards. Automatic shifters for throwing belts on and off are also safety devices which should be considered.

**Danger.** Any saw, regardless of size, is dangerous. The numerous small saws of different kinds used in the average wood-working plant are often a greater menace than are larger saws in the mills. Every precaution possible should be taken by the operator of small saws to prevent injury to the careless or reckless of whom there are many in shops of all kinds. In many states factory inspection laws requires certain safeguards on wood-working appliances.

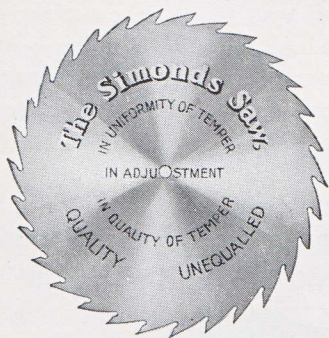


# Circular Saws

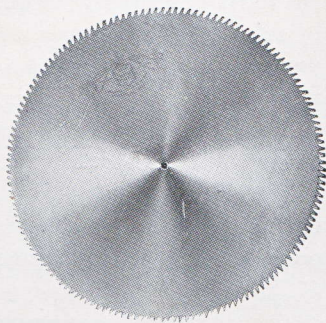


**T**HE two main divisions of Circular Saws are Metal and Wood Cutting and both are made with either solid or inserted or removable teeth.

**Circular Saws** for cutting wood are made in all sizes from 4 inches to 100 inches, rarely larger. The "size" of a circular saw is its diameter in inches. Like hand saws they are made both for cutting-off and for ripping, that is the "cut-off" saw for cutting across the grain and the "splitting or rip" for cutting with the grain. The shape and set of the teeth depends upon whether the saw is to be used for



Splitting or Rip Saw



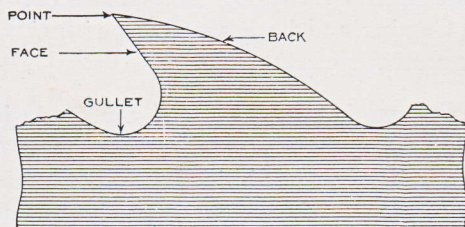
Cut-off Saw

splitting or ripping. The number of the teeth will also vary according to the kind of material to be sawed and the smoothness of cut wanted.

Circular saws in the larger diameters are mainly used in saw mills for sawing logs into lumber.

The smaller size of solid tooth saws are used in wood-working shops for cutting and ripping boards and finished stock. Other circular saws are described in Simonds' book entitled *The Circular Saw*.

**Small Circular Rip Saws.** The sizes of the smaller circular saws that are most commonly used are the 16 inch, 14 gauge thick and the 18 inch, 13 gauge thick.



Cut A

Cut "A" shows the correct shape and names of the different parts of a rip saw tooth. It is well to get these clearly in mind before proceeding. These saws should be kept perfectly round and true on the edge and the gullets round at the bottom and of equal depth and width. They never should be filed to sharp corners at the bottom of the teeth for it will cause them to crack at this point. The best results can only be obtained by keeping the points of the teeth sharp and in proper shape to cut. They should be either spring set or swaged for clearance and this work

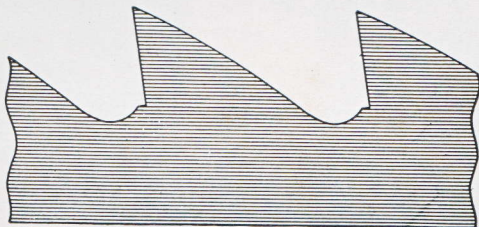


should be carefully done. By "swaging" is meant spreading the extreme point of the tooth wider than the plate



(the body) of the saw to provide the necessary clearance. Swaging should be of uniform width and depth, and sufficiently stout so that the points will not crumble.

Rip saws are frequently complained of as being either too hard or too soft, when in reality the trouble is entirely due to the manner in which they are filed. For instance, if the teeth do not have sufficient forward angle or hook on the face as shown in Cut "B" or are extremely stout at the points, they will cut hard even when sharp.



Cut B

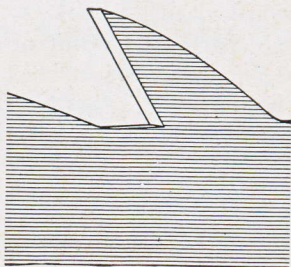
When they become slightly dull, which they will in a very short time, on account of the blunt shape of the points, they will not cut at all and are very liable to crack.

The teeth should be kept in proper shape as shown in Cut "A" and the results obtained, both in quality and quantity of work done will pay well for the time and labor expended.

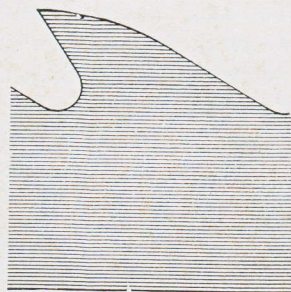
An emery wheel or round file is indispensable for the proper care of these saws for it is impossible to maintain the desired shape with the use of a common flat file only. Machines are now made to keep the teeth in perfect shape.

In order to maintain the original hook and back line of the tooth, it is necessary that about the same amount of filing be done on the back as on the front of the tooth. For if there is more filing done on the face of the tooth than on the back, the original shape is soon destroyed and it is almost impossible to restore it to the proper shape without re-toothing the saw.

Cut "C" will perhaps illustrate the idea better than anything that might be said on the subject. Cut "C" represents a tooth of a saw where all the filing is done on the face. The bad results from this method of filing can readily be seen. The body of the tooth is now so slim that it will not



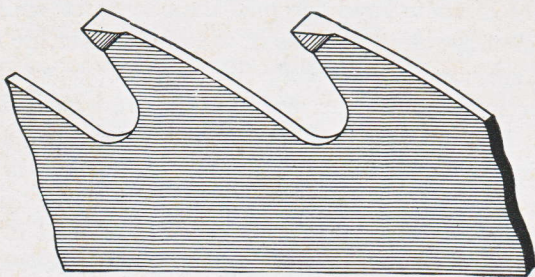
Cut C



Cut D

support the point in doing its work, but will chatter and vibrate in the cut and be liable eventually to break at this weak point.

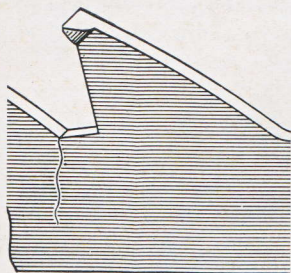
Cut "A", previously referred to, represents a tooth very well adapted to miscellaneous work, but if very hard or kiln dried hardwood is to be sawed, use a narrow gullet and stouter tooth, as shown in Cut "D." For general work about the shop the points of the teeth should be swaged four gauges heavier than the plate. If the saw is 14 gauge ( $\frac{5}{64}$  inch full),



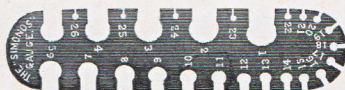
Cut F



the swage should be 10 gauge ( $\frac{1}{8}$  inch full). This amount of swage will also work satisfactorily in softwood. In cutting hardwood, if the swage is three gauges heavier than the blade, the saw will work well.



Cut G



Saw Gauge

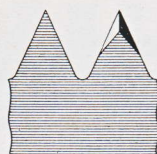
Every man that files saws should have a “saw gauge.” By its use the work of setting and swaging saws is greatly simplified. The smoothness of the work done and the light and easy running of the saw depend largely on the teeth being properly swaged for the special work required of the saw.

The teeth of saws are frequently split at the points by attempting to swage them when in the condition shown in Cut “G.” The teeth should always be kept in about the shape shown in Cut “F” and much trouble will be avoided in swaging and fewer split teeth or cracked saws will result.

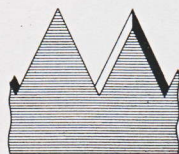
**Small Circular Cut-off Saws.** In setting and filing small circular cut-off saws as in small rip saws, it is essential in all cases that they be kept perfectly round and true on the edge. The teeth should be of uniform width and shape and the gullets of equal depth and width. Every tooth should have the proper amount of bevel and this bevel should be alike on both sides of the tooth when a “V” tooth is used.

It can be seen in Cut "H" that the point only of the tooth is beveled. The point being the only portion of the tooth that cuts, the remainder is left square across to carry out the sawdust.

Cut "I" shows the same tooth as Cut "H", but improperly filed to a sharp corner at the bottom of the tooth.



Correct  
Cut H



Incorrect  
Cut I

If the same amount of time and labor were used in dressing out the gullets with an emery wheel or filing them down with a round file that is used in filing the long bevel and sharp notch at the bottom of the tooth, as shown in Cut "I", much trouble would be avoided from the cracking and breaking of saws.

The most common sizes of small circular cut-off saws are 14, 16 and 18 inches.

**Set.** Cut-off saws are spring set the same as hand saws. The amount of set used in cut-off saws also varies in different kinds of wood. For hard and very dry wood the set should not be more than 1 gauge heavier than the plate. If the plate is 14 gauge ( $\frac{5}{64}$  inch) the set should be to 13 gauge ( $\frac{3}{32}$  inch).

For softwoods the set recommended is 2 gauges heavier than the plate. A saw 14 gauges ( $\frac{5}{64}$  inch) would have a set to 12 gauges ( $\frac{7}{64}$  inch).

The best set for green and damp woods is 4 gauges heavier than the plate. If the saw is 14 gauges ( $\frac{5}{64}$  inch) the set should be to 10 gauges ( $\frac{1}{8}$  inch).

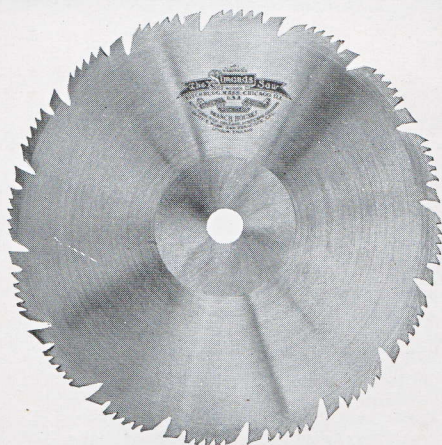


The following dimensions of Circular Saws will give satisfaction in general work. If a saw is wanted for special work consult the manufacturer. Tell what you want to do with it, and you will get a saw that is right.

| Diameter<br>Inches | Thickness<br>Gauge | Thickness<br>Fractions | Size of<br>hole | Number of<br>Splitting | Teeth<br>Cut-off |
|--------------------|--------------------|------------------------|-----------------|------------------------|------------------|
| 6                  | 18                 | $\frac{3}{64}$         | $\frac{3}{4}$   | 40                     | 100              |
| 8                  | 18                 | $\frac{3}{64}$         | $\frac{7}{8}$   | 36                     | 100              |
| 10                 | 16                 | $\frac{1}{16}$ Full    | 1               | 36                     | 100              |
| 12                 | 15                 | $\frac{5}{64}$ Scant   | 1               | 36                     | 90               |
| 14                 | 14                 | $\frac{5}{64}$ Full    | $1\frac{1}{8}$  | 36                     | 90               |
| 16                 | 14                 | $\frac{1}{8}$ Full     | $1\frac{1}{8}$  | 36                     | 80               |
| 18                 | 13                 | $\frac{3}{32}$         | $1\frac{1}{4}$  | 36                     | 80               |
| 20                 | 13                 | $\frac{3}{32}$         | $1\frac{5}{16}$ | 36                     | 80               |
| 22                 | 12                 | $\frac{7}{64}$         | $1\frac{5}{16}$ | 36                     | 72               |
| 24                 | 11                 | $\frac{1}{8}$ Scant    | $1\frac{3}{8}$  | 36                     | 72               |

## Novelty Saws

In woodworking shops where the demand is for a circular saw which cuts a smooth narrow kerf in order to save valuable stock and make fine joints, novelty and mitre saws are used.

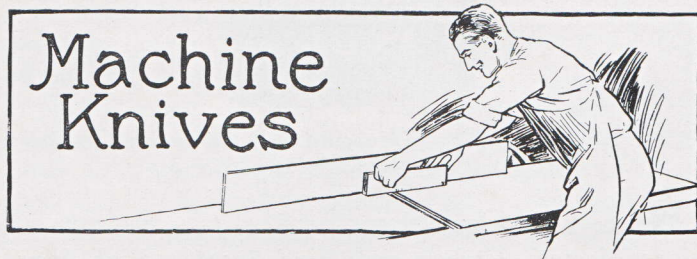


The novelty saw is especially designed for just this kind of work. It is ground tapering thinner toward the center so as to provide ample clearance in order that it may run without set. The narrowest kerf possible is thus obtained and in factories where a large amount of stock is cut the saving is readily seen.

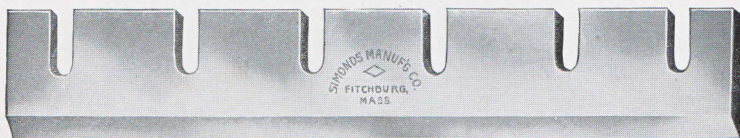
Simonds novelty saws are made in sizes from 6 to 24 inches in diameter; 12 inch, 14 inch and 16 inch saws are the most popular sizes. These saws are made with either cutting-off or ripping teeth.

Mitre saws are similarly made and are thicker at the cutting edge than at the center. The main difference is in the shape and size of the teeth. Mitre saws are used for cutting-off, while novelty saws can be used both for cutting-off or ripping.

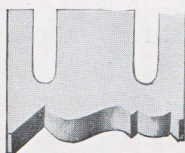




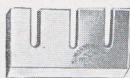
THERE are many different kinds of machine knives with a great variety of uses ranging from the small moulding "bits" an inch and a half long, used to make moulding for building trim, to the big veneer "slicers" six or seven feet long for making veneer stock. The knives which are most commonly used in woodworking shops are Planer Knives for planing or surfacing boards and lumber.



Veneer Knife

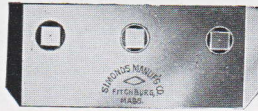


Moulding Knife



Barker Knife

Used for stripping the bark from logs



Chipper Knife

Used to cut wood into pulp for making paper

**Planer Knives** used today are made from two different kinds of steel, Carbon and High Speed. High Speed refers to the kind of steel used in making the knife and not to the rate of speed with which the knives revolve in the planer.



While the **High Speed Steel Knives** are rapidly becoming more widely used because they will stay sharp longer and will plane more lumber in a day there are still a large number of Carbon Steel Knives in use. Trouble with either kind is due to the same causes.

Care should be taken not to run planer knives after they have become dull, or to let the lumber stop in the machine and permit the knife to pound in one place on it.

Dull knives are heated on the edge by rubbing off instead of cutting the lumber, while the body of the knives being in contact with the cold metal of the cylinder head does not expand. Therefore the cutting edge, expanded by heat, bends and buckles in an effort to free itself. The cutting edge buckling when heated and straightening when



cold, works the steel as you would break a wire. Unequal expansion causes checks and cracks on the cutting edge of the knife.

Knives sometimes break from other causes but practically all finished knives that break and show a flaw  $\frac{1}{4}$  inch down from the cutting edge are heat checked, and have been abused by heat in grinding, by friction generated, because the knives were run when dull or because the lumber stopped in the machine and the knives were allowed to pound in one place on the lumber.

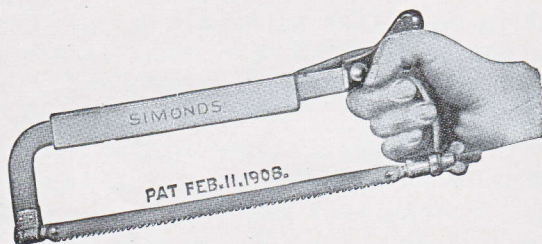
Be sure knives are ground by men who know how to do it right. If there are none available in your vicinity send them to the manufacturer where you are sure of having them ground properly.

The manufacturers of the various planing machines furnish information about the care and the conditions under which their machines operate most satisfactorily. This information is free and should be in the hands of every man that has a planer in his shop.



THE woodworking shop, the general repair shop, the farm and home will find considerable use for hack saw blades and frames. These are in reality hand saws used for cutting metal instead of wood. As the blade used in cutting metal wears out in a short time, the blades are made separately and are used in a frame that is adjustable for blades of varying lengths.

Hack saw blades are made all-hard or with a hard edge. It is evident that to cut metal, the teeth of the saw must be harder than the metal to be cut or they cannot retain their edge. The harder a piece of steel is, the more readily will it break. All-hard hack saw blades break easily when not properly used. Therefore, for school purposes or for ordi-



nary use the hard edge blade is recommended. The flexible back prevents it breaking under any ordinary usage and even if the hard edge cracks or breaks, the saw will continue to cut. Hack saw blades may be used for cutting slots in screw heads and for other purposes besides cutting off.



Simonds blades, both all-hard and hard edge, are made with varying number of teeth to the inch, from 9 to 32. For the hard metals, like tool steel, fine teeth, less liable to "shell," or "strip," are recommended. For average machine shop hand use, 18 teeth to the inch is recommended and for machine use, 9 to 14 to the inch.



14 Teeth to the inch  
For Soft Steels and Rails



24 teeth to the inch  
For Brass, Copper, Drill Rod,  
Sheet Metal and Medium Tubing



18 teeth to the inch  
Solid Iron, Tool Steel, Iron Pipe



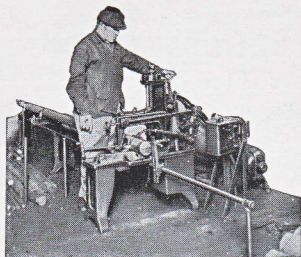
32 teeth to the inch  
Thin Sheet Metal and Tubing

Start new blades with light pressure. See that at least two teeth engage the work at the same time. When starting at a corner, notch it with a file so as to let two teeth take hold at the same time.

Don't start with a new blade in an old cut. Turn the metal to be sawed over and start new on the opposite side.

Don't use cutting compound when cutting by hand. Cutting compound only assists by keeping the blade cool when run at a higher speed in a machine.

Don't use a saw with a coarse tooth when cutting thin sheet metal or thin tubing or for cutting solid brass, copper or gas pipe. Use coarse teeth on solid steel and iron.



Cold-rolled steel takes a coarse blade such as 14, 12 or 9 teeth per inch. Heavy machines use 4 or 6 teeth per inch. Blades for machine use may be either all hard or hard edge.



Thin stock should be sawed between two pieces of wood when possible, allowing the hack saw to cut both the wood and the metal. Saw with the blade at an angle to the metal so as to allow as many teeth as possible to take hold at the same time.



Tubes and pipes have two thin walls to cut. There must be at least two teeth in the cut at a time.

Thin metals demand the finest of teeth for there must be two teeth in the cut all the time. 32 teeth to the inch makes the best blade.

The teeth of a hack saw blade should never engage the metal on the return stroke.

**Table of Hard Edge Hand Blades**  
**Number of Teeth Per Inch Recommended**

| Material to be cut | Teeth per inch | Material to be cut | Teeth per inch |
|--------------------|----------------|--------------------|----------------|
| Brass              | 24             | Sheet Metals       | 24             |
| Copper             | 24             | Sheet Metal—Thin   | 32             |
| Drill Rod          | 24             | Steel—Soft         | 14             |
| Iron-Angle         | 18             | Steel—Tool         | 18             |
| Iron-Pipe          | 18             | Tubing—Medium      | 24             |
| Iron-Solid         | 18             | Tubing—Thin        | 32             |
| Rails              | 14             |                    |                |

In using the power machine hack saw blade, first find out whether the machine is of the draw-cut or push-stroke type and insert blade accordingly, having the rake of the teeth in the direction in which the cutting is done.

In starting to cut, light pressure should be used, gradually increasing as blade becomes worn. When cutting without the aid of a lubricant the machine should not make over 50 strokes per minute, but if lubricant is used the speed may be increased to 120 strokes. One Simonds blade used in a high speed machine cut off 218 pieces of  $2\frac{7}{16}$  cold rolled steel shaft.

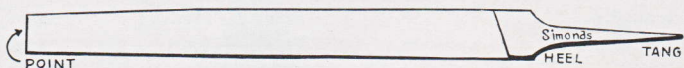
A hack saw blade is not resharpened. Use it until it fails to cut, then discard it. For this reason economy comes in buying the blade that will do the most cutting for the money.





**F**ILES differ in size and shape, also in the form and size of the cutting teeth.

The tang is the smooth pointed end of the file made for fitting into the handle. Some files have a tang at each end.



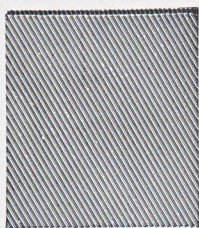
Tangs are not included in measuring the length of the file. The point is the end of the file opposite the tang. The heel is the end next to the handle.

A blunt file is one that does not change its shape between the tang and the point.

A taper file is one that in all its length or part of its length tapers toward the point.

A bellied file is one with a fullness in the center.

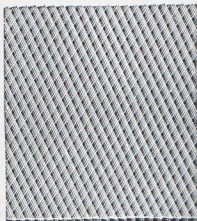
A safe edge or safe side file is one having one or more of its edges or sides smooth. In using the file this safe edge may be rubbed over a finished surface without affecting it while at the same time another edge of the file is cutting near it.



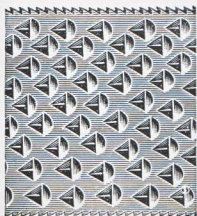
Single-cut

The teeth of a single-cut file are long and sharp like the point of a chisel. They run across the file but not at right angles with the side. They may be fine and close together or coarse and farther apart. The coarsest single-cut tooth used by machinists is called Rough; the next, Bastard; the next, Second-cut;

next, Smooth; and the finest, Dead Smooth. There is also a tooth called Coarse that is sometimes used. It comes between Rough and Bastard and is usually used for filing wood.



Double-cut  
and smooth are the teeth most commonly used.



Rasp-cut

The teeth of a double-cut file are sharp points made by cutting across the teeth of a single-cut file at an angle with the side of the file similar to the angle of the single-cut. These teeth will be coarse or fine as in the single-cut and are called by similar names. In both single-cut and double-cut files, bastard, second-cut,

The rasp tooth or cut is made by punching the file blank with a pointed tool or punch. This produces a larger tooth raised higher above the surface. These teeth will cut faster than either single-cut or double-cut. Rasps are used chiefly by wood workers, also by shoemakers.

Files are generally used for finishing or for sharpening. There are hundreds of regular styles and sizes and thousands of regular and special styles and sizes combined.

The smallest files are probably those used by jewelers and are about three inches long and the size of a small wire. From this, files are made in all sizes up to a special machinist's file, rarely used of course, nearly five feet long, four inches wide, about an inch thick and weighing nearly forty pounds.

The most common forms of files are here illustrated.



**Mill Files.** Tapered in both width and thickness, 3" to 18" long, single-cut, usually bastard. For sharpening mill saw, machine knives and plows. Also used in machine shops.



**Flat File.** Tapered, 3" to 18" long, double-cut, usually bastard, second-cut or smooth. Probably the commonest file in use by mechanics.



**Hand File.** Tapered in thickness only, 3" to 16" long, double-cut, usually bastard. Preferred for filing flat surfaces. Has one safe edge.



**Square File.** Tapered or blunt, 3" to 18" long, double-cut, bastard. Used for filing sides of rectangular openings.



**Round File or Rat Tail File.** Tapered or blunt, 4" to 18" long, single-cut, mostly bastard. Used for filing inside of round holes or similar surfaces.



**Half Round File.** Tapered, 3" to 18" long, double-cut, mostly bastard. Finer than bastard are single-cut on curved line. Extensively used by machinists.



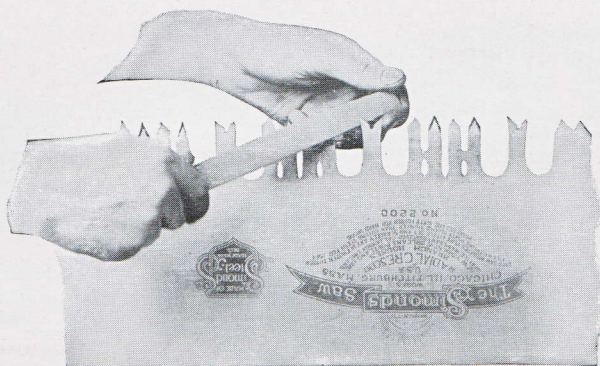
**Slim Taper or Hand Saw File.** Tapered to a small point, triangular, 3" to 10" long, single-cut. Used for filing hand saws. This shape of file is usually called the Three Square File but the regular Three Square File must not be confused with the Hand Saw Three Square File. The former is unfit for filing saws.



## How to Use A File

To use a file properly requires knowledge and experience. You can learn most quickly from one who knows how. Then fix what you have learned by practice. Have the work at the right height so that you can freely swing your arms from the shoulder. The right height for heavy work is a little lower than for fine work. Work with the whole arm movements as far as possible. Be sure the work is held rigidly in the vise.

Find the way of holding the file so as to get the greatest ease and freedom. This is usually with the thumb on the top of the handle pointing towards the point of the file and with the handle of the file in the palm of the hand so that the tips of the fingers point upward toward the eyes of the user. Hold the point of the file by the thumb and first two fingers of the left hand.



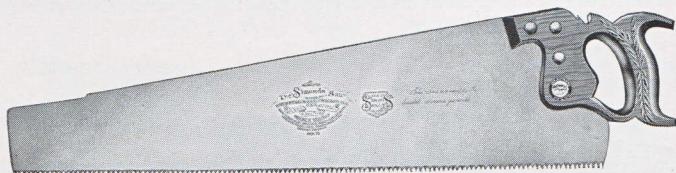
In using the file press only on the forward part of the stroke. Ease up on the return. Do not use fast strokes. This will give better results and also lengthen the life of the file.

Only in special cases, usually to prevent scratching, should oil be used upon a file. When it leaves the factory it is oiled to prevent rusting. It should be thoroughly cleaned before using. Rub chalk or charcoal between the teeth and brush thoroughly. It should be kept clean and free from filings. Never put a file away after using it without cleaning it. Do not leave it carelessly knocking around. The edges may be nicked or broken off, as would be the case with any other sharp edged tool. Use your tools skillfully, care for them properly and unless they are inferior in quality they will do the work you ought to expect of them. Never buy inferior tools. Get good ones and take care of them.

# Simonds Blue Ribbon Hand Saws

## Distinctive Wide Saws

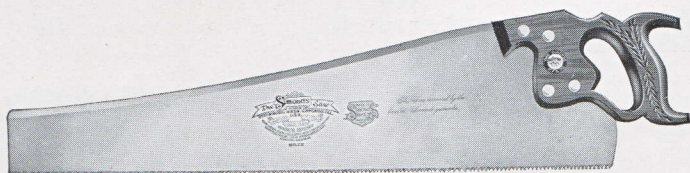
Saws above the average in quality and appearance. Made for the carpenter who appreciates a better grade of tools. Blue Ribbon in trade-mark.



No. 71. Straight Back

Its distinctive appearance, fine steel and splendid workmanship places it in a class by itself. Full taper ground blade.

|              | Panel | Hand     | Rip  |
|--------------|-------|----------|------|
| Points       | 9     | 7-8-9-10 | 5½-6 |
| Length, ins. | 24    | 26       | 26   |



No. 72. Skew Back

A "Blue Ribbon" Saw with skew back. Polished applewood handle carved on grip. They are known for their fast, easy cutting because they "hang" right. All blades for "Blue Ribbon" Saws are made of the finest crucible steel, full taper ground.

|              | Panel     |           | Hand        | Rip       |    |
|--------------|-----------|-----------|-------------|-----------|----|
| Points       | 8-9-10-11 | 8-9-10-11 | 7-8-9-10-11 | 5-5½-6-6½ |    |
| Length, ins. | 20-22     | 24        | 26          | 24        | 26 |

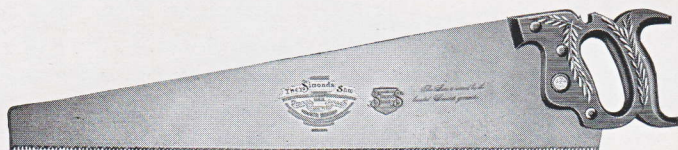
*Write for Prices*



# Simonds Blue Ribbon Hand Saws

## Distinctive Narrow Saws

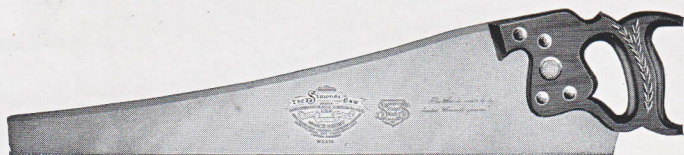
Here is a narrow bladed Finishing, Siding, or Ship saw, made with that high quality of material and appearance which genuinely pleases carpenters desiring this style of a special saw. It may also be described as a Mitering saw or a combination Hand and Panel saw. Blue Ribbon in trade-mark.



**No. 371.** Straight Back, Narrow

Finishing Saws are a necessity in every tool kit. Same quality and finish as No. 71. Narrow straight back blade. Like all "Blue Ribbon" Saws the No. 371 is a good seller. Four screws on handle. These saws are made to "hang" as well as the wide bladed saws.

|              | Panel       | Hand        | Rip  |
|--------------|-------------|-------------|------|
| Points       | 7-8-9-10-11 | 7-8-9-10-11 | 5½-6 |
| Length, ins. | 24          | 26          | 26   |



**No. 372.** Skew Back, Narrow

Same quality and finish as the No. 72. Made of Simonds Crucible Steel, tempered by Simonds patented process. Made in Simonds Factories. Simonds "Blue Ribbon" Saws are fully warranted.

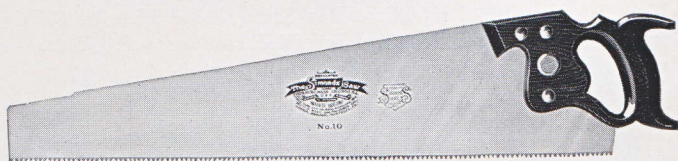
|              | Panel    | Hand        | Rip    |
|--------------|----------|-------------|--------|
| Points       | 7-8-9-10 | 7-8-9-10-11 | 5-5½-6 |
| Length, ins. | 24       | 26          | 26     |

*Write for Prices*

## Simonds Hand Saws

**Warranted Special Crucible Steel, Simonds Patented Temper**

In Nos. 10 and 10½ we offer a straight back and a skew back, manufacturer's own brand saw, at a price so low as to appeal especially to the amateur mechanic, the manual training student, or the worker on the farm or at the home shop. Selected Steel, Taper Ground Blades, Polished Beech Handles, Four Screws.



**No. 10.** Straight Back, Medium Width

A splendid value at a moderate price.

|              | Panel     |           | Hand     |            | Rip      |
|--------------|-----------|-----------|----------|------------|----------|
| Points       | 8-9-10-11 | 8-9-10-11 | 7-8-9-10 | 6-7-8-9-10 | 5-5½-6-7 |
| Length, ins. | 18-20     | 22        | 24       | 26         | 26       |



**No. 10½.** Skew Back

This number is the same quality and finish as the No. 10. Made with full width skew back, selected steel blades. These two saws are covered by the broadest Simonds warranty. The quality of material and workmanship is unequalled for the price.

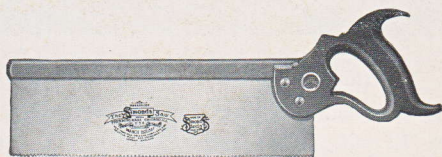
|              | Panel     |                | Hand             |      | Rip    |
|--------------|-----------|----------------|------------------|------|--------|
| Points       | 8-9-10-11 | 7-8-9-10<br>11 | 6-7-8-9-10<br>11 | 5½-6 | 5-5½-6 |
| Length, ins. | 18-20-22  | 24             | 26               | 24   | 26     |

*Write for Prices*

## Simonds Crucible Steel Mitre Box Saws

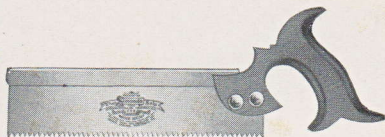


**No. 95.** Crucible Steel Mitre Box Saws, Apple Handle, Polished Edges, Blued Steel Back, Set and Hand Filed, ready for use. Warranted. Toothed Edge, 2 inches shorter than the full length of blade.



### Simonds Crucible Steel Back Saws

**No. 97.** Crucible Steel Blade, Beech Handle, Polished Edges, Blued Back, Set and Hand Filed, ready for use. Warranted.



**No. 170. Back Saw, Prof. Ball Pattern.** Apple Handle. Polished Edges, Brass Plated Steel Back, Simonds Crucible Steel Blade,  $1\frac{1}{2}$  inches wide under back, 26 gauge, 17 points to the inch

|              |   |   |    |    |
|--------------|---|---|----|----|
| Length, ins. | 6 | 8 | 10 | 12 |
|--------------|---|---|----|----|

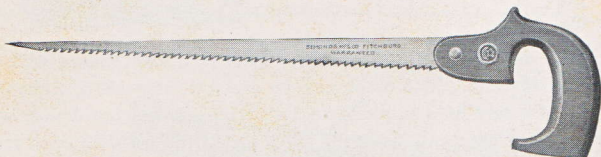
*Write for Prices.*



## Simonds Compass and Keyhole Saws



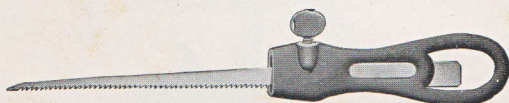
**No. 84.** Nest of saws. Combining one each 10" Keyhole, 14" Compass and 16" Table or Pruning Saw.



**No. 87.** Compass Saw, Crucible Steel. Applewood Handle.  
Sizes 10", 12", 14", and 16".



**No. 82.** Keyhole saw with adjustable pad, 9" blade.



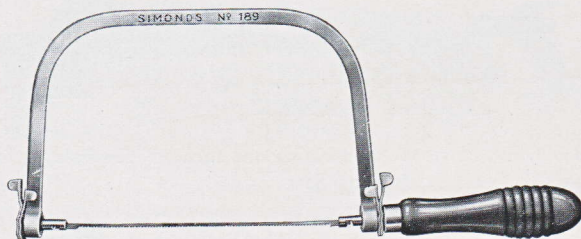
**No. 90.** Keyhole saw and pad, 9" blade.



**No. 14 Joiner or Bench Saw.** Special Crucible Steel Blade, Carved and Polished Applewood Handle. Length 17".

*Write for Prices*

## Simonds Saws



**No. 189. Simonds Coping Saw.** Nickel plated Frame with polished Birch Handle. The blade can be faced in any one of eight directions, and is firmly held in place by an automatic locking device which is superior to other methods used. A blade furnished with each frame.

**No. 189 B. Simonds Coping Saw Blades.** Extra 6" blades.



**No. 168. Dovetail Saw.** Polished Handle, Brass Plated Steel Back, Simonds Crucible Steel Blade  $1\frac{1}{2}$ " wide under back, 26 gauge, 17 points to the inch.

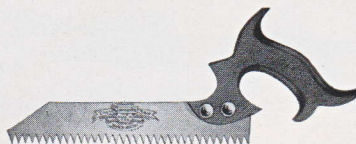
Length, ins.

6

8

10

12



**No. 166. Pattern Makers' Saw.** Apple Handle, blade  $7\frac{1}{2}$ " x  $1\frac{1}{4}$ " 21 gauge, 15 points.



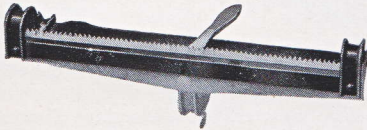
**No. 186. Cabinet Scraper.** Saw steel, plain cut edges.  
 Sizes  $2" \times 4"$  to  $5" \times 6"$ .

*Write for Prices*

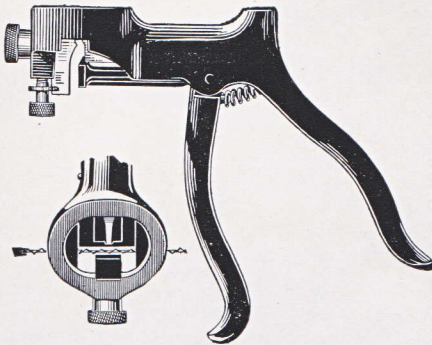
## Simonds Saw Tools



**No. 339. Hand Saw Jointer.** Adjustable to any thickness of saw blade, and may be used with any common file. Japanned.



**No. 198. Hand Saw Clamp.**

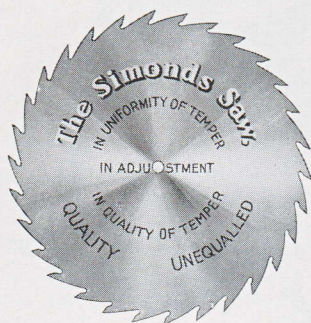


**No. 42. Simonds Saw Set.** The shape of the body and handle enables the user to operate the tool with great ease and with the least possible exertion and the saw is held firmly against the gauge while the tooth is being set.

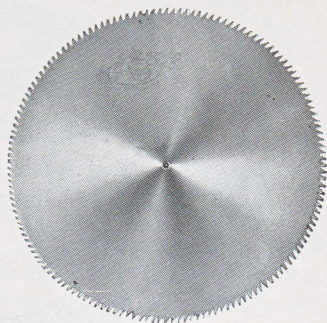
*Write for Prices*



## Simonds Solid Tooth Circular Saws



Rip



Cut-off

The special crucible saw steel used in making Simonds Circular Saws, and the scientific methods of manufacture account for their remarkable success when run under most strenuous mill conditions. Simonds Saws are safe and reliable.

| Diameter<br>Inches | Thickness<br>Gauge | Size Hole<br>Inches |
|--------------------|--------------------|---------------------|
| 6                  | 18                 | $\frac{3}{4}$       |
| 8                  | 18                 | $\frac{7}{8}$       |
| 10                 | 16                 | 1                   |
| 12                 | 15                 | 1                   |
| 14                 | 14                 | $1\frac{1}{8}$      |
| 16                 | 14                 | $1\frac{1}{8}$      |
| 18                 | 13                 | $1\frac{1}{4}$      |
| 20                 | 13                 | $1\frac{5}{16}$     |
| 22                 | 12                 | $1\frac{5}{16}$     |
| 24                 | 11                 | $1\frac{3}{8}$      |
| 26                 | 11                 | $1\frac{3}{8}$      |
| 28                 | 10                 | $1\frac{1}{2}$      |
| 30                 | 10                 | $1\frac{1}{2}$      |

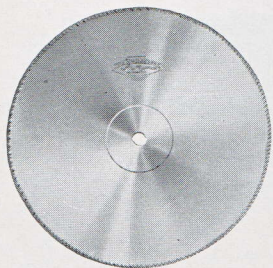
All saws less than 6 inches in diameter take list of 6 inch saw.

All saws filed and set ready for use.

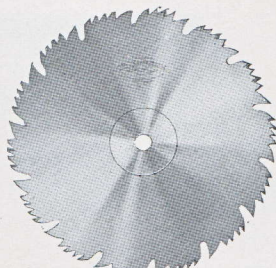
No extra charge for saws one gauge thicker than list.

*Write for Prices*

## Simonds Circular Mitre and Novelty Saws



Mitre



Novelty

Mitre and Novelty saws are both ground tapering to the collar, to run without set and provide ample clearance. They are especially adapted to smooth, clean cutting, such as cabinet and cigar-box work. Novelty saws will not cut as fast as saws with ordinary splitting or cutting-off teeth, and their use is not advised when crowding the work is considered of more importance than smoothness in finish.

Novelty saws are made for either cutting off or ripping. When ordering specify which is desired.

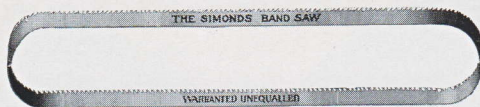
| Size<br>Inches | Gauge<br>at Hole | Gauge at<br>Edge of Collar | Gauge<br>at Teeth |
|----------------|------------------|----------------------------|-------------------|
| 6              | 17               | 20                         | 17                |
| 8              | 16               | 19                         | 16                |
| 10             | 15               | 18                         | 15                |
| 12             | 14               | 17                         | 14                |
| 14             | 13               | 16                         | 13                |
| 16             | 13               | 16                         | 13                |
| 18             | 12               | 15                         | 12                |
| 20             | 12               | 15                         | 12                |
| 22             | 11               | 14                         | 11                |
| 24             | 11               | 14                         | 11                |

List Price includes filing teeth so that saw is ready for use.

We do not recommend Circular Mitre Saws of thinner gauge than listed.

*Write for Prices*

## Simonds Narrow Band Saws



**Special Notice**—Narrow Band Saws are furnished Set and Filed, but not Brazed.

| Width, Inches  | Usual Gauge | Standard Number of Teeth to Inch | Price per Foot |
|----------------|-------------|----------------------------------|----------------|
| $\frac{1}{8}$  | 23          | 6                                | \$0.13         |
| $\frac{3}{16}$ | 22          | 6                                | .13            |
| $\frac{1}{4}$  | 21          | 5                                | .13            |
| $\frac{3}{8}$  | 21          | 4                                | .14            |
| $\frac{1}{2}$  | 21          | 4                                | .15            |
| $\frac{5}{8}$  | 21          | 3                                | .16            |
| $\frac{3}{4}$  | 21          | 3                                | .18            |
| $\frac{7}{8}$  | 20          | $2\frac{1}{2}$                   | .20            |
| 1              | 20          | 3                                | .22            |
| $1\frac{1}{4}$ | 20          | 2                                | .26            |
| $1\frac{1}{2}$ | 20          | 2                                | .32            |

Above prices cover Saws, Set and Filed but not Brazed.

If not Filed and Set, deduct 4 cents per foot.

Brazing— $\frac{1}{4}$  to  $\frac{1}{2}$  in., 50 cents each;  $\frac{5}{8}$  to  $\frac{7}{8}$  in., 60 cents; 1 to  $1\frac{1}{4}$  in., 70 cents;  $1\frac{3}{8}$  to  $1\frac{3}{4}$  in., 80 cents.

*Write for Prices*



## Simonds Machine Knives



### Carbon Planer Knife

Made of crucible steel, tempered to hold it's edge for long productive hours.



### Paper Cutting Knife

The fact that Simonds Knives have been used for years and are still being used by many of the largest printers in the country tells of real worth. They are better.



### Red Streak High Speed Steel Knife

New in improved quality of steel and cutting service. Equal tests—Simonds New Knives running in competition with other makes prove their greater worth in money saved and increased production.

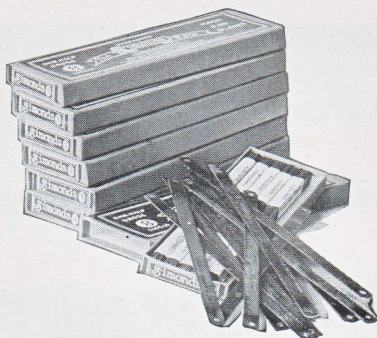
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### When Ordering a New Knife

It is well to furnish a pattern of your old knife when ordering a new one. Place the knife face down and mark around to show the length and size and position of slots or holes. Be sure to state the width and thickness, also state the number of knives wanted, number of sets, number in set, name and make of machine.

We gladly furnish pattern blanks, without cost, for your use.

## Simonds Hard Edge Hack Saw Blades



Simonds blades, because they cut with less resistance, remove no more metal than necessary, and outwear other makes, are the most economical Hack Saw Blades on the market.

The steel used in the Simonds Hack Saw is made and toughened by a Simonds process especially for hard cutting service. It is the basis on which this exceptionally high grade blade is built.

### Simonds Hand Hack Saw Blades

| Length   | Width              | Gauge     | Regu-<br>lar | Teeth per Inch |      |    | Extra<br>Fine       | No. in<br>Box |
|----------|--------------------|-----------|--------------|----------------|------|----|---------------------|---------------|
|          |                    |           |              | Med-<br>ium    | Fine |    |                     |               |
| 8 inches | $\frac{1}{2}$ inch | 23 = .025 | 14           | 18             | 24   | 32 | $\frac{1}{2}$ gross |               |
| 9 "      | $\frac{1}{2}$ "    | 23 = .025 | 14           | 18             | 24   | 32 | $\frac{1}{2}$ "     |               |
| 10 "     | $\frac{1}{2}$ "    | 23 = .025 | 14           | 18             | 24   | 32 | $\frac{1}{2}$ "     |               |
| 12 "     | $\frac{1}{2}$ "    | 23 = .025 | 14           | 18             | 24   | 32 | $\frac{1}{2}$ "     |               |

Regular—for cutting soft steel, iron solids, and rails.

Medium—for cutting tool steel, iron pipe, hard metals and light angle irons.

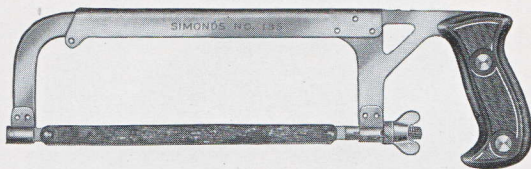
Fine—For cutting brass, copper, drill rod, medium tubing and sheet metals.

Extra Fine—For cutting thin tubing and thin sheet metals.

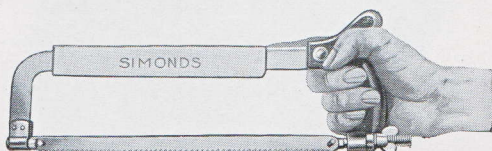
Unless specified, "Regular" blades will be sent.

*Write for Prices*

## Simonds Hack Saw Frames



**No. 135.** Nickel plated. Adjustable for blades 8" to 12" long. 2½" from back of blade to inside of frame.



**No. 41.** Nickel plated. Heavy Back. Blades can be faced in four directions. Adjustable for blades 8" to 12"

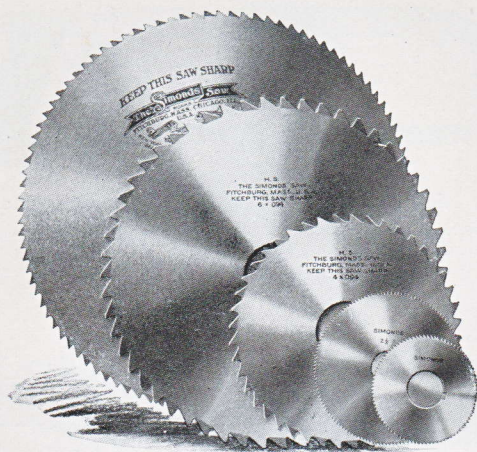


**No. 20.** Nickel plated. Blade can be faced in four directions. 8" Frames.

*Write for Prices*



## Simonds Metal Slitting Saws

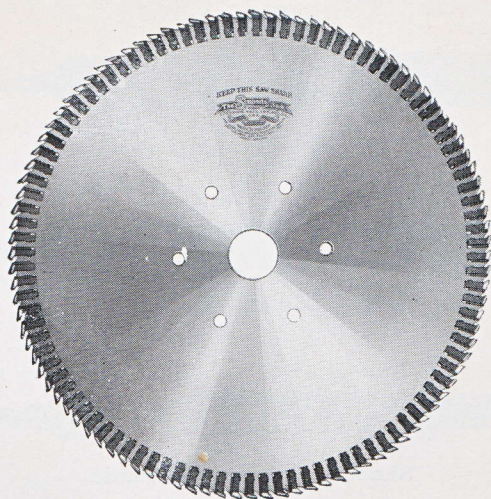


Metal Slitting Saws are used mostly for making slits of a specified size. They are also used as a universal saw in machine shops for doing various kinds of small cutting-off work, this work being on all kinds of steel.

**Teeth—Number of.** Metal Slitting Saws have teeth ranging about as follows:

|     |          |    |          |
|-----|----------|----|----------|
| 2½" | 28 teeth | 6" | 42 teeth |
| 3"  | 32 "     | 7" | 44 "     |
| 4"  | 36 "     | 8" | 46" "    |
| 5"  | 40 "     |    |          |

*Write for Prices*



## Simonds Metal Cutting Saws

### Solid or Inserted Tooth

Here is an Inserted Tooth Metal Saw, simple in design and built on correct mechanical lines for heavy duty. It will give excellent satisfaction. Let us know the make of your machine, size of saw wanted and the dimensions; kind and carbon of stock you desire to cut and we will furnish you a saw that will not only cut the stock but will also reduce the time ordinarily required to do it.

*Write for Prices.*

## Simonds Files



Simonds Hand Bastard



Simonds Flat Bastard



Simonds Half Round Bastard



Simonds Mill Bastard



Simonds Slim Taper

All regular kinds of Files of different cut—Coarse, Bastard, Smooth, etc.—carried in stock ready for prompt shipment.

*Write for Prices*



## Table of Contents

|                                      |       |
|--------------------------------------|-------|
| Addresses . . . . .                  | 64    |
| Band Saws—Narrow . . . . .           | 23    |
| Care of Hand Saws . . . . .          | 20    |
| Circular Saws . . . . .              | 27-34 |
| Care of Small Rip Saws . . . . .     | 28-31 |
| Care of Small Cut-off Saws . . . . . | 31-33 |
| Novelty and Mitre Saws . . . . .     | 33-34 |
| Files . . . . .                      | 42-46 |
| Hack Saws Blades . . . . .           | 38-41 |
| Hand Saws Blades . . . . .           | 5-22  |
| How to File a Hand Saw . . . . .     | 15-20 |
| Machine Knives . . . . .             | 35-37 |

## **We Offer Our Service**

As one of the world's largest and longest established manufacturers of Saws, Planer Knives, and Files we have found that the greatest successes come from giving genuine service to one's customers. This we give by answering all questions regarding these lines as well as by furnishing promptly products that are unquestioned leaders from the standpoint of quality.

## **Simonds Saw and Steel Company**

*Established 1832—Fitchburg, Mass.*

|                                         |                                                    |                                            |
|-----------------------------------------|----------------------------------------------------|--------------------------------------------|
| 1350 Columbia Road<br>Boston, Mass.     | 127-129 So. Green St.<br>Chicago, Ill.             | 109 Lafayette St.<br>New York City         |
| 239 Court Avenue<br>Memphis, Tenn.      | Cor. Mt. Elliott and E. Fort St.<br>Detroit, Mich. | 420 Canal St.<br>New Orleans, La.          |
| 410 Occidental Avenue<br>Seattle, Wash. | 85 First Street<br>Portland, Ore.                  | 12-14 Natoma Street<br>San Francisco, Cal. |

## **Simonds Canada Saw Company, Ltd.**

|                                       |                                               |                                 |
|---------------------------------------|-----------------------------------------------|---------------------------------|
| 554 Beatty Street<br>Vancouver, B. C. | St. Remi St. and Acorn Ave.<br>Montreal, Que. | 55 Water St.<br>St. John, N. B. |
|---------------------------------------|-----------------------------------------------|---------------------------------|

## **Simonds Saws, Ltd.**

Fulwood House, Fulwood Place, High Holborn,  
London, W. C. No. 1, England